

Emergency Response Procedures for Radioactive Spill or Emergency

Major spills, contaminations, or injuries with radioactive materials must be reported. Contact:

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Montana Tech Security: 4357 (HELP)

Emergency Procedures:

1. If spill or contamination involves injury, administer first aid.
2. If spill is on the skin, flush thoroughly; if spill is on clothing, discard.
3. Take whatever steps to contain the contamination that can be taken safely and immediately.
 - If liquid, apply absorbent material
 - If gas or airborne powder, stop the release and
 - Evacuate the area
 - Seal and post the location
 - Shut down the ventilation in that area if possible
4. Take immediate steps to decontaminate personnel involved.
5. Do not leave scene until instructed to do so.
6. Monitor all persons involved in the spill and clean-up.
7. Contact the Radiation Safety Officer (RSO).
8. Permit no person to resume work in the area until a survey has been made and approval of the RSO is secured.

Decontamination Procedures

Intact skin:

- Avoid spread of contamination
- Remove clothing from contaminated person
- Decontaminate affected area of skin:

Procedure: scrub with mild soap, water and soft brush for 2-3 minutes. Repeat at least 3-4 times. Monitor in between washes. If necessary, use mild abrasive (paste of cornmeal and tide, 50/50, in water) repeating 3-4 times. Dry skin and monitor again.

Contaminated hair:

Shampoo hair with head deflected backwards. Wear gloves! Rinse with 3% citric acid, wash again, rinse, and dry with hair dryer. Monitor.

Contaminated eyes:

Spread eyelids, rinse with water from nose to lateral angle of eye.

Whole body contamination:

Remove all clothing, shower immediately with water, brush with mild soap; repeat at least 3-4 times, towel dry, and then monitor. Use mild abrasive paste if necessary. If unsuccessful, await physician's orders. Following decontamination, use lotion on skin.

Contaminated wounds: (Any wound acquired while using radionuclides)

Rinse wound under running water. Delimit contaminated area with waterproof material.

Decontaminate skin around the wound. Remove tape, apply sterile dressing.

In case of contamination with highly radiotoxic substances, apply venous tourniquet close to the wound. Notify physician immediately. If wounds are contaminated with short-lived radioisotopes of less toxicity, rinsing the wound with sodium chloride or 3% hydrogen peroxide should be done. Monitor, apply sterile dressing and obtain tetanus shot if needed.

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Uptake of Radioactive materials:

Uptake may occur through ingestion (smoking, eating, drinking, pipetting); inhalation (gaseous substances, aerosols, gases); or penetration of skin (gaseous substances, acne, wounds).

Counter measures: Determine time of accident, type of uptake, kind of radionuclide, chemical nature and level of activity of contaminant. Contact physician immediately.

Decision to treat with chelating agents should be made by experts. Chelation should be started within less than one hour in order to be effective.

Spill Cleanup Procedures

Major incidents such as contamination of the body or clothing, ingestion of radioactive material, contamination that cannot be cleaned up readily, etc., must be reported to the Radiation Safety Officer immediately.

Minor incidents such as a spill involving contaminants less than 1000 dpm per 100 square centimeters may be decontaminated by laboratory personnel under the supervision of the authorized user.

All spills of radioactive material must be cleaned promptly. The responsibility for cleaning up the spill rests on the individuals working in the area involved and responsible for the spill. Under no circumstances should an untrained person attempt to examine or clean up a spill of radioactive material. If assistance is needed, contact the Environmental Health and Safety (EH&S) Office at 4463.

The following general procedures should be followed when dealing with spills of radioactive materials:

1. Inform others of the spill

Adjust your response to the seriousness of the spill. Instruct those personnel present in the room at the time of the spill to remain in an evacuation area to prevent contamination spread. Have someone notify EH&S of the incident. If it occurs after normal working hours, report the incident to Security (4357) and have them contact the Radiation Safety Officer. Affected persons should limit their movement to confine the spread of contamination. Evacuated personnel should not eat, drink or smoke until they are monitored and found free of contamination.

2. Contain the spill

If possible, the spill should be shielded, but only if it can be done without further contamination or without significantly increasing your radiation exposure. If the material is a liquid, place an absorbent material such as paper towels, tissues, cloth, etc., over the spill to prevent its spread. If the material spilled is a powdered solid, attempt to contain its spread by covering the area with a protective barrier such as a drip tray, empty beaker, section of craft paper, etc. If appropriate, close doors and windows and shut off ventilating equipment that may transport contaminated air or particles from the spill area to other parts of the building. Post or cordon off the contaminated area.

3. Assemble in a nearby safe or clear area

Begin monitoring and decontamination of affected persons. Remove contaminated clothing at once and flush contaminated skin areas thoroughly. DO NOT LEAVE THE AREA unless adequately decontaminated or with the permission of the radiation safety officer.

4. Decontaminate the area

Provide adequate protection and supplies for personnel involved in the cleanup. Begin at the periphery and work toward the center of the contamination. Cover cleaned areas with plastic or paper to prevent its recontamination. Place all contaminated items in the proper waste containers.

5. Monitor the progress of the decontamination

Using appropriate survey techniques (wipe samples, scan the area with a Geiger counter, etc.) verify all personnel and materials are properly decontaminated before releasing them to clean areas.